PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Docket No: Q77174
Takayuki TSUTSUMI, et al.	
Appln. No.: 10/648,277	Group Art Unit: 2419
Confirmation No.: 4437	Examiner: Andrew W. Chriss
Filed: August 27, 2003	
For: FAST ROAMING SYSTEM	

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

The real party in interest is NEC INFRONTIA CORPORATION of Japan. The Assignment was recorded in the U.S. Patent and Trademark Office on December 31, 2003, at Reel 014847, Frame 0173.

II. RELATED APPEALS AND INTERFERENCES

Upon information and belief, there are no other prior or pending appeals, interferences, or judicial proceedings known to Appellant, Appellants' representatives, or the Assignee that may be related to, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-29 are all of the claims pending in the application (*see* Claims Appendix).

Claims 1-3, 5, 6, 8-17, 19, 20, and 22-29 stand finally rejected as follows and are the basis for this appeal:

Claims 1-3, 6, 12, 15-17, 20, 28, and 29 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0025810 to Takayama et al. (hereinafter "Takayama").

Claims 5 and 19 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of U.S. Patent Application Publication No. 2001/0046879 to Schramm et al. (hereinafter "Schramm").

Claims 8, 9, 22, and 23 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of U.S. Patent No. 6,393,282 to Iimori (hereinafter "Iimori").

Claims 10 and 24 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of U.S. Patent No. 5,864,578 to Yuen (hereinafter "Yuen").

Claims 11 and 25 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of U.S. Patent Application Publication No. 2003/0123405 to del Prado et al. (hereinafter "del Prado").

Claims 13, 14, 26, and 27 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of U.S. Patent Application Publication No. 2004/0063426 to Hunkeler (hereinafter "Hunkeler").

Claims 4, 7, 18, and 21 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

In general, Appellant's claimed invention relates to a fast roaming system whereby a mobile terminal, while communicating with an access point, serving as a parent station, over a wireless LAN that conforms to the IEEE 802.11 specifications developed by the Institute of Electrical & Electronics Engineers (IEEE), can be quickly switched from the parent station to an adjacent access point having an overlapping communication range. The present invention relates in particular to a fast roaming system wherein, without communication being interrupted, a roaming destination access point providing better environmental conditions can be selected and a roaming completion ratio improved, and wherein a fast roaming operation can be effectively performed under a variety of conditions. *See* page 1, lines 6-15 of the Specification.

Independent Claim 1

Specifically, independent claim 1 is directed to:

a fast roaming system[1] comprising at least one mobile terminal[2] and at least two access points[3],

wherein the at least one mobile terminal, while communicating over a wireless LAN with an access point of the at least two access points, serving as a parent station, can be quickly

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[1] *See, e.g.*, FIG. 3, and page 11, lines 17-26 of the Specification.

[2] *See, e.g.*, FIG. 3, element 1, and page 11, line 19 of the Specification.

[3] *See, e.g.*, FIG. 3, elements 2-A and 2-B, and page 11, lines 19-21 of the Specification.

switched from the parent station to an adjacent access point of the at least two access points having an overlapping communication range[4];

wherein each of the at least two access points comprises:

a wireless LAN interface for communicating with the mobile terminal over the wireless LAN[5],

a roaming unit for performing a roaming operation[6],

a beacon transmitter for transmitting a beacon signal to provide synchronization with the mobile terminal[7], and

a data transmitter for transmitting, to the mobile terminal, access point data required for the roaming operation[8]; and

wherein the mobile terminal comprises:

a wireless LAN interface for communicating with an access point over the wireless LAN[9],

an access point search unit for searching for peripheral connectable access points and for obtaining access point data[10],

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[4] *See, e.g.*, page 12, lines 12-18 of the Specification.

[5] *See, e.g.*, FIG. 5, element 26, and page 15, line 8 of the Specification.

[6] *See, e.g.*, FIG. 5, element 25, and page 15, line 7 of the Specification.

[7] *See, e.g.*, FIG. 5, element 24, and page 15, line 7 of the Specification.

[8] *See, e.g.*, FIG. 5, element 23, and page 15, line 7 of the Specification.

[9] *See, e.g.*, FIG. 4, element 11, and page 12, line 21 of the Specification.

a roaming execution unit for transferring the connection of the mobile terminal from a currently connected access point to another, designated access point[11],

an access point data table in which the access point data detected and obtained by the access point search unit are recorded[12], and

a function controller for, when a condition for communicating with the currently connected access point matches a predetermined roaming operation start condition, employing a predetermined order sequence to select one of the access points entered into the access point data table, and for driving the roaming unit to perform the roaming operation for the access point that is selected[13].

Independent Claim 15

Specifically, independent claim 15 is directed to:

a mobile terminal capable of performing fast roaming[14],

wherein the mobile terminal, while communicating over a wireless LAN with an access point can be quickly switched from the access point with which there is communication to an adjacent access point having an overlapping communication range[15]; and

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[10] *See, e.g.*, FIG. 4, element 13, and page 12, line 22 of the Specification.

[11] *See, e.g.*, FIG. 4, element 14, and page 12, lines 22-23 of the Specification.

[12] *See, e.g.*, FIG. 4, element 151, and page 12, line 24 of the Specification.

[13] *See, e.g.*, FIG. 4, element 16, and page 12, line 23 of the Specification.

[14] *See, e.g.*, FIG. 3, element 1, and page 11, line 19 of the Specification.

[15] *See, e.g.*, page 12, lines 12-18 of the Specification.

wherein the mobile terminal comprises:

a wireless LAN interface for communicating with an access point over the wireless LAN[16],

an access point search unit for searching for peripheral connectable access points and for obtaining access point data[17],

a roaming execution unit for transferring the connection of the mobile terminal from a currently connected access point to another, designated access point[18],

an access point data table in which the access point data detected and obtained by the access point search unit are recorded[19], and

a function controller for, when a condition for communicating with the currently connected access point matches a predetermined roaming operation start condition, employing a predetermined order sequence to select one of the access points entered into the access point data table, and for driving the roaming unit to perform the roaming operation for the access point that is selected[20].

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[16] *See, e.g.,* FIG. 4, element 11, and page 12, line 21 of the Specification.

[17] *See, e.g.,* FIG. 4, element 13, and page 12, line 22 of the Specification.

[18] *See, e.g.,* FIG. 4, element 14, and page 12, lines 22-23 of the Specification.

[19] *See, e.g.,* FIG. 4, element 151, and page 12, line 24 of the Specification.

[20] *See, e.g.,* FIG. 4, element 16, and page 12, line 23 of the Specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-3, 6, 12, 15-17, 20, 28, and 29 are improperly finally rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Takayama.

Whether claims 5 and 19 are improperly finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Schramm.

Whether claims 8, 9, 22, and 23 are improperly finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Iimori.

Whether claims 10 and 24 are improperly finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Yuen.

Whether claims 11 and 25 are improperly finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of del Prado.

Whether claims 13, 14, 26, and 27 are improperly finally rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Hunkeler.

VII. ARGUMENT

Appellant respectfully requests that the Board reverse the final rejections of the claims pending in the application at least for the following reasons.

A. General Description of the Prior Art

A brief discussion of a reference the Examiner cites in support of the claim rejections is presented here for the Board's convenience.

1. Takayama

Takayama relates to a high-speed roaming technology in the infrastructure type wireless LAN environment (*see* paragraph 0002 of Takayama). According to Takayama, a high-speed roaming method is provided that is capable of executing the roaming in a very short time by applying immediately the subscription operation to the neighboring access point having the best communication environment at a point of time when the beacon quality of the connected access point is lowered below the threshold value (*see* paragraph 0017 of Takayama).

B. Claim Rejections under 35 U.S.C. § 102(e)

Claims 1-3, 6, 12, 15-17, 20, 28, and 29 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Application Publication No. 2002/0025810 to Takayama. Appellant respectfully submits that these grounds of rejection are legally and technically inaccurate, and are in error, as explained by the following remarks.

1. Legal Standard

The standard for whether a prior art reference anticipates a claim under 35 U.S.C. § 102(e) is that the reference must teach each limitation of the rejected claim in as complete detail

as recited in the claim. In other words, to be an "anticipation" rejection under 35 U.S.C. § 102, the reference must teach every element and recitation of Appellant's claims. Accordingly, if any element or limitation of the claim is absent from the prior art reference, then there can be no anticipation. *See* MPEP § 2131.

2. Claims 1-3, 6, 12, 15-17, 20, 28, and 29

Turning first to independent claim 1, the Examiner alleges that Takayama discloses a mobile terminal comprising the following features, recited in claim 1:

> an access point search unit for searching for peripheral connectable access points and for obtaining access point data, [... and]
>
> an access point data table in which the access point data detected and obtained by the access point search unit are recorded

Appellant respectfully disagrees. Instead of a mobile terminal searching for peripheral connectable access points and obtaining access point data, and instead of a data table where the data obtained by the mobile terminal is recorded, according to Takayama, the station downloads hopping information of neighboring access points from the subscription access point (*see* paragraph 0077 of Takayama).

A person of ordinary skill in the art would understand that a mobile terminal searching for peripheral connectable access points and obtaining access point data is not the same as downloading information on neighboring access points from a single subscription access point.

According to Takayama, each of the access points (not the mobile stations) receives hopping information of the neighboring access points and constructs a database using the received information (*see* paragraph 0018 of Takayama). Then, rather than the mobile terminal

searching for access points and obtaining access point data, which is recorded in an access point data table, according to Takayama, the mobile terminal monitors the radio beacons of the connected access point and downloads the database of hopping information of the neighboring access points from the connected access point (*see* paragraph 0018 of Takayama).

In response to this argument for patentability, the Examiner alleges that Takayama discloses a mobile terminal comprising a wireless LAN interface and a CPU that scans and monitors beacons for peripheral access point data for storage in a database. The Examiner further alleges that "searching for peripheral connectable access points" is taught by the scanning operation disclosed by Takayama, and that access point data is downloaded from the access point found during the scanning operation. *See* pages 8 and 9 of the Office Action and page 2 of the Advisory Action.

Appellant respectfully disagrees. Contrary to the Examiner's assertion, Takayama does not disclose a mobile terminal comprising a wireless LAN interface and a CPU that scans and monitors beacons for peripheral access point data for storage in a database.

Firstly, according to Takayama, scanning all channels of the radio frequency via the wireless MAC controller 32 is performed only when hopping information is not downloaded (*see* FIG. 8, step S85 and paragraph 0083 of Takayama). Takayama does not disclose storing the information obtained by scanning in any database. Instead, paragraph 0081 and FIG. 8 of Takayama illustrate that the database includes hopping information that has been downloaded, not information obtained through scanning. According to Takayama, when all channels of the radio frequency are scanned (because hopping information is not downloaded), a database is not

used (*see* FIG. 8 of Takayama). Takayama only discloses using a database to compare the communication situations of the neighboring access points when the hopping information of the neighboring access points has been downloaded (*see* FIG. 8, steps S81 and S82 of Takayama). Thus, Takayama does not disclose recording in an access point data table access point data detected and obtained by the access point search unit of a mobile terminal.

Secondly, when hopping information is downloaded from the subscription access point, the mobile terminal does not search for peripheral connectable access points. Instead, according to Takayama, hopping information of neighboring access points is saved in the subscription access point and downloaded by the station (*see* paragraph 0077 of Takayama). Thus, it is unnecessary for a mobile terminal to search for peripheral connectable access points because the hopping information has been downloaded. The Examiner points to disclosure regarding monitoring beacons (*see* page 9 of the Office Action), but according to Takayama, beacon quality is monitored to determine the latest radio situation of neighboring access points, not to search for peripheral connectable access points.

Accordingly, Appellant respectfully submits that Takayama does not disclose that the mobile terminal searches for the peripheral connectable access points and obtains the access point data, which is recorded in an access point data table. At least for this reason, Appellant respectfully submits that claim 1 is patentable over Takayama.

Claim 15 recites features similar to, although not necessarily coextensive with, the features discussed above with respect to claim 1. Thus, Appellant respectfully submits that claim 15 is patentable over Takayama at least for the reasons discussed above with respect to claim 1.

Appellant respectfully submits that claims 2, 3, 6, 12, and 28 and claims 16, 17, 20, and 29 are patentable over Takayama at least by virtue of their dependency on claims 1 and 15, respectively.

C. Claim Rejections under 35 U.S.C. § 103(a)

Claims 5 and 19 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Schramm. Claims 8, 9, 22, and 23 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Iimori. Claims 10 and 24 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Yuen. Claims 11 and 25 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of del Prado. Claims 13, 14, 26, and 27 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takayama in view of Hunkeler.

Appellant respectfully submits that these grounds of rejection are legally and technically inaccurate, and are in error, as explained by the following remarks.

1. Legal Standard

The Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. *See* MPEP § 2142. To establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), the Examiner must show that the prior art reference(s), when combined, must teach or suggest all of the claim limitations. *See* MPEP § 2143.

2. Claims 5, 8-11, 13, 14, 19, and 22-27

Appellant respectfully submits that claims 5, 8-11, 13, 14, 19, and 22-27 are patentable over Takayama at least by virtue of their dependency on claim 1 or 15, as discussed above.

Appellant further submits that the disclosure of Schramm, Iimori, Yuen, del Prado, and Hunkeler does not cure the deficiencies of Takayama with respect to claims 1 and 15. Accordingly, Appellant respectfully submits that claims 5, 8-11, 13, 14, 19, and 22-27 are patentable over the various combinations of Takayama, Schramm, Iimori, Yuen, del Prado, and Hunkeler applied by the Examiner.

D. Conclusion

In view of the foregoing, Appellant respectfully requests that the Board reverse these rejections.

The USPTO is directed and authorized to charge the statutory fee (37 C.F.R. §41.37(a) and 1.17(c)) and all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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WASHINGTON OFFICE
23373
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Date: May 26, 2009

CLAIMS APPENDIX

CLAIMS 1-29 ON APPEAL:

1. A fast roaming system comprising at least one mobile terminal and at least two access points,

wherein the at least one mobile terminal, while communicating over a wireless LAN with an access point of the at least two access points, serving as a parent station, can be quickly switched from the parent station to an adjacent access point of the at least two access points having an overlapping communication range;

wherein each of the at least two access points comprises:

a wireless LAN interface for communicating with the mobile terminal over the wireless LAN,

a roaming unit for performing a roaming operation,

a beacon transmitter for transmitting a beacon signal to provide synchronization with the mobile terminal, and

a data transmitter for transmitting, to the mobile terminal, access point data required for the roaming operation; and

wherein the mobile terminal comprises:

a wireless LAN interface for communicating with an access point over the wireless LAN,

an access point search unit for searching for peripheral connectable access points and for obtaining access point data,

a roaming execution unit for transferring the connection of the mobile terminal from a currently connected access point to another, designated access point,

an access point data table in which the access point data detected and obtained by the access point search unit are recorded, and

a function controller for, when a condition for communicating with the currently connected access point matches a predetermined roaming operation start condition, employing a predetermined order sequence to select one of the access points entered into the access point data table, and for driving the roaming unit to perform the roaming operation for the access point that is selected.

2. A fast roaming system according to claim 1, wherein the mobile terminal provides a roaming order as the order condition for the access point that is recorded in the access point data table; and wherein, until a roaming process is completed, the function controller repeats the roaming process in the roaming order to sequentially select a roaming destination.

3. A fast roaming system according to claim 2, wherein the mobile terminal monitors a reception level of a wireless signal received from a connectable access point, stores the reception level to the access point data table, and sets the roaming order beginning with the highest reception level.

4. A fast roaming system according to claim 2, wherein the data transmitter of each of the at least two access points transmits, to the mobile terminal, the number of mobile terminals connected to the access point; and wherein the access point search unit of the mobile terminal stores, in the access point data table, the number of mobile terminals that is received, and sets the

roaming order beginning with the smallest number of the mobile terminals connected to the access point.

5. A fast roaming system according to claim 2, wherein the data transmitter of each of the at least two access points transmits, to the mobile terminal, an error ratio of data that are exchanged; and wherein the access point search unit of the mobile terminal stores the received error ratio in the access point data table, and sets the roaming order beginning with the lowest error ratio.

6. A fast roaming system according to claim 2, wherein the data transmitter of each of the at least two access points transmits, to the mobile terminal, a communication ratio for a communication band of the access point; and wherein the access point search unit of the mobile terminal stores the received communication ratio in the access point data table, and sets the roaming order beginning with the lowest communication ratio.

7. A fast roaming system according to claim 2,

wherein the data transmitter of each of the at least two access points transmits, to the mobile terminal, traffic data that include the number of mobile terminals connected to the access point, the error ratio of data that are exchanged, and the communication ratio for the communication band of the access point;

wherein the access point search unit of the mobile terminal stores the number of mobile terminals, the error ratio and the communication ratio in the access point data table; and

wherein the function controller of the mobile terminal adds predetermined weights to multiple entries in the access point data table, including the number of mobile terminals, the

error ratio and the communication ratio, obtains the sums for the individual access points, and sets the roaming order beginning with the smallest sum.

8. A fast roaming system according to claim 1, wherein the mobile terminal further comprises:

a reception level area, in the access point data table, for which, during communication, reception levels of wireless signals received from the parent station that is an access point are monitored and stored sequentially at predetermined times;

a level comparator for comparing the reception level of each received wireless signal with reception levels in the past;

a counter for counting the times for comparison; and

a roaming start instruction unit for defining, as the predetermined roaming start condition, when the result of the comparison, the reception level is lowered continuously by the number of times that matches a predetermined count.

9. A fast roaming system according to claim 8, wherein the mobile terminal further includes:

a roaming start instruction unit for comparing, with the reception levels of signals received from the connected parent station, a reception level of a wireless signal obtained by the access point search unit, and for defining, as the roaming start, when the reception level of the signal obtained by the access point search unit is a predetermined value or larger.

10. A fast roaming system according to claim 1, wherein the mobile terminal further includes:

a roaming start instruction unit for extracting an error ratio included in a beacon signal received from the connected parent station, and storing the error ratio, and for defining, as the roaming start, when the error ratio is larger than a predetermined error ratio.

11. A fast roaming system according to claim 1,

wherein the access point search unit of the mobile terminal obtains the end time of a contention-free period, which are included in both a beacon signal and a probe response; and

wherein, the access point search unit searches for peripheral access points during a period except for a period where data are transmitted and received, after the contention-free period is over.

12. A fast roaming system according to claim 1, wherein one selected access point is located as a master parent station for transmitting a synchronized packet; and wherein the master parent station comprises:

a synchronized packet transmitter for transmitting, to another access point, a synchronized packet that is synchronized with a beacon signal transmitted by the master parent station; and wherein each of the other access points includes:

a synchronized packet receiver for receiving the synchronized packet; and

a beacon transmitter for defining, as a reference time, the reception time for the synchronized packet, and for, after a predetermined time has elapsed following the reception of the reference time, transmitting a beacon signal, without overlapping a beacon signal from another access point.

13. A fast roaming system according to claim 12, wherein the access point search unit of the mobile terminal comprises:

a passive scanner for receiving a beacon signal and for searching for an access point; and

a beacon table, in which the correlation between a wireless channel and a beacon transmission time is recorded,

wherein the passive scanner performs the passive scanning at the time recorded in the beacon table, excluding the time whereat the mobile terminal is transmitting and receiving data.

14. A fast roaming system according to claim 13, wherein the mobile terminal further comprises:

an active scanner for examining an access point from which a response is received relative to a search packet that the access point search unit has transmitted to the access point,

wherein, when the passive scanner fails to obtain the access point through passive scanning, the active scanner performs the active scanning.

15. A mobile terminal capable of performing fast roaming,

wherein the mobile terminal, while communicating over a wireless LAN with an access point can be quickly switched from the access point with which there is communication to an adjacent access point having an overlapping communication range; and

wherein the mobile terminal comprises:

a wireless LAN interface for communicating with an access point over the wireless LAN,

an access point search unit for searching for peripheral connectable access points and for obtaining access point data,

a roaming execution unit for transferring the connection of the mobile terminal from a currently connected access point to another, designated access point,

an access point data table in which the access point data detected and obtained by the access point search unit are recorded, and

a function controller for, when a condition for communicating with the currently connected access point matches a predetermined roaming operation start condition, employing a predetermined order sequence to select one of the access points entered into the access point data table, and for driving the roaming unit to perform the roaming operation for the access point that is selected.

16. A mobile terminal according to claim 15, wherein the mobile terminal provides a roaming order as the order condition for the access point that is recorded in the access point data table; and wherein, until a roaming process is completed, the function controller repeats the roaming process in the roaming order to sequentially select a roaming destination.

17. A mobile terminal according to claim 16, wherein the mobile terminal monitors a reception level of a wireless signal received from a connectable access point, stores the reception level to the access point data table, and sets the roaming order beginning with the highest reception level.

18. A mobile terminal according to claim 16, wherein the mobile terminal receives from each of the access points the number of mobile terminals connected to the access point; and

wherein the access point search unit of the mobile terminal stores, in the access point data table, the number of mobile terminals that is received, and sets the roaming order beginning with the smallest number of the mobile terminals connected to the access point.

19. A mobile terminal according to claim 16, wherein the mobile terminal receives from each of the access points an error ratio of data that are exchanged; and wherein the access point search unit of the mobile terminal stores the received error ratio in the access point data table, and sets the roaming order beginning with the lowest error ratio.

20. A mobile terminal according to claim 16, wherein the mobile terminal receives from each of the access points a communication ratio for a communication band of the access point; and wherein the access point search unit of the mobile terminal stores the received communication ratio in the access point data table, and sets the roaming order beginning with the lowest communication ratio.

21. A mobile terminal according to claim 16,

wherein the mobile terminal receives from each of the access points traffic data that include the number of mobile terminals connected to the access point, the error ratio of data that are exchanged, and the communication ratio for the communication band of the access point;

wherein the access point search unit of the mobile terminal stores the number of mobile terminals, the error ratio and the communication ratio in the access point data table; and

wherein the function controller of the mobile terminal adds predetermined weights to multiple entries in the access point data table, including the number of mobile terminals, the

error ratio and the communication ratio, obtains the sums for the individual access points, and sets the roaming order beginning with the smallest sum.

22. A mobile terminal according to claim 15, wherein the mobile terminal further comprises:

a reception level area, in the access point data table, for which, during communication, reception levels of wireless signals received from a parent station that is an access point are monitored and stored sequentially at predetermined times;

a level comparator for comparing the reception level of each received wireless signal with reception levels in the past;

a counter for counting the times for comparison; and

a roaming start instruction unit for defining, as the predetermined roaming start condition, when the result of the comparison, the reception level is lowered continuously by the number of times that matches a predetermined count.

23. A mobile terminal according to claim 22, wherein the mobile terminal further includes:

a roaming start instruction unit for comparing, with the reception levels of signals received from a connected parent station, that is an access point, a reception level of a wireless signal obtained by the access point search unit, and for defining, as the roaming start, when the reception level of the signal obtained by the access point search unit is a predetermined value or larger.

24. A mobile terminal according to claim 15, wherein the mobile terminal further includes:

a roaming start instruction unit for extracting an error ratio included in a beacon signal received from a connected parent station, that is an access point, and storing the error ratio, and for defining, as the roaming start, when the error ratio is larger than a predetermined error ratio.

25. A mobile terminal according to claim 15,

wherein the access point search unit of the mobile terminal obtains the end time of a contention-free period, which are included in both a beacon signal and a probe response; and

wherein, the access point search unit searches for peripheral access points during a period except for a period where data are transmitted and received, after the contention-free period is over.

26. A mobile terminal according to claim 15, wherein the access point search unit of the mobile terminal comprises:

a passive scanner for receiving a beacon signal and for searching for an access point; and

a beacon table, in which the correlation between a wireless channel and a beacon transmission time is recorded,

wherein the passive scanner performs the passive scanning at the time recorded in the beacon table, excluding the time whereat the mobile terminal is transmitting and receiving data.

27. A mobile terminal according to claim 26, wherein the mobile terminal further comprises:

an active scanner for examining an access point from which a response is received relative to a search packet that the access point search unit has transmitted to the access point,

wherein, when the passive scanner fails to obtain the access point through passive scanning, the active scanner performs the active scanning.

28. A fast roaming system according to claim 1, wherein the access point search unit obtains the access point data from the peripheral connectable access points.

29. A mobile terminal according to claim 15, wherein the access point search unit obtains the access point data from the peripheral connectable access points.

EVIDENCE APPENDIX:

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

NONE

RELATED PROCEEDINGS APPENDIX

Submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified about in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

NONE